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BEGIN REEL # 17~~9~~

FROM: Gutkin, L. S.

to:

80161  
S/108/60/015/04/03/007  
B014/B014

6.9000

AUTHOR: Gutkin, L. S., Member of the Society

TITLE: Some Relations in Optimum Systems for Detecting Signals, (Continued)

PERIODICAL: Radiotekhnika, 1960, Vol. 15, No. 4, pp. 21 - 26

TEXT: This is the second part of an article published in Radiotekhnika, 1960, Vol. 15, No. 2, which deals with the detection of pulse packets. No coherent relation is assumed to exist between the phases of the pulse packets, whereby some more parameters neglected in the first part, are added. The author first studies the binary detection, and gives formula (36) for the  $E/N_0$  ratio ( $E$  = packet energy). Furthermore, he studies an optimum system of the  $m$ -alternative discrimination and detection, and for the analogous ratio  $E/N_0$  he obtains formula (41). Formulas (39) and (41) are used to determine fluctuating signals in both cases under consideration. The following was shown: If the relation  $E = nE_1$  holds ( $E_1$  = energy of a pulse), the required energy increases with increasing  $n$ , which ✓

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Some Relations in Optimum Systems for Detecting  
Signals (Continued)

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fact is related to the incoherence of the signals. Reference is made to the part played by the characteristics of the detector. In conclusion, the author thanks Yu. B. Kobzarev, Corresponding Member of the AS USSR, for his valuable advice. Some operations which were only outlined in this article, are explained in detail in Appendices 1 and 2. There are 1 figure and 3 references, 1 of which is Soviet.

SUBMITTED: August 4, 1958

Card 2/2

SIFOROV, V.I., doktor tekhn.nauk, prof.; GUTKIN, L.S., doktor tekhn.nauk,  
prof.; LEBEDEV, V.L., kand.tekhn.nauk, dotsent

Development of radio engineering in the Soviet Union. Trudy  
MEI no.33:243-266 '60. (MIRA 15:3)

1. Chlen-korrespondent AN SSSR (for Siforov).  
(Radio)

PHASE I BOOK EXPLOITATION

SOV/5952

Gutkin, Lev Solomonovich

Teoriya optimal'nykh metodov radiopriyema pri fluktuatsionnykh pomekakh (Theory of Optimal Methods of Radio Reception in the Presence of Fluctuation Noise) Moscow, Gosenergoizdat, 1961. 487 p. Errata slip inserted. 10,000 copies printed.

Ed.: K. N. Trofimov; Tech. Ed.: K. P. Voronin.

PURPOSE: This book is intended for specialists in the field of radio engineering and in related branches of general engineering. It may also be useful to students of advanced courses in schools of higher education.

COVERAGE: The book discusses the theory of optimal methods of reception of radio signals against a background of fluctuation noise. According to the author's definition, optimal methods are methods which would secure in one way or another the best reception of

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Theory of Optimal Methods (Cont.)

SOV/5952

signals in the presence of noise. Basically, the analysis is applicable to radio signals, although the majority of the methods and results may also be related to other types of signals, such as in wire communications, acoustics, etc. The examined theory is of a statistical nature and an understanding of it presupposes a knowledge of the law of probability. Approximately 25% of the material presented in the book is based on the author's original works (Ch. XVIII, Sections 7-2, 7-3, 11-3, 11-4, etc.). The remainder of the book is based on the compilation and analysis of Soviet and non-Soviet materials. The author thanks A. Ye. Basharinov, Doctor of Technical Sciences, and Ye. M. Gutkina for their assistance. There are 124 references: 109 Soviet (including 15 translations), and 15 English.

~~TABLE OF CONTENTS [Abridged]:~~

Foreword

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GUTKIN, L.S.; LEBEDEV, V.L.; SIFOROV, V.I.; ARENBERG, N.Ya., red.;  
SVESHNIKOV, A.A., tekhn. red.

[Radio receiving devices] Radiopriemnye ustroistva. Pod red.  
V.I.Siforova. Moskva, Sovetskoe radio. Pt.1. 1961. 702 p.  
(MIRA 15:7)

(Radio--Receivers and reception)

GUTKIN, L.S.; LEBEDEV, V.L.; SIFOROV, V.I. Priruchniki uchebnikiye:  
VASIL'YEV, D.V.; SVISTOV, H.K.; LYUBIMOVA, T.M., red.;  
BELYAYEVA, V.V., tekhn. red.

[Radio receiving devices] Radiopriemnye ustroistva. Pod  
red. V.I.Siforova. Moskva, Sovetskoe radio. Pt.2. 1963.  
399 p. (MIRA 17:2)

GUTKIN, L.S.

Theory of optimum radio reception techniques. Izv. AN SSSR. Tekh.  
kib. no.5:84-89 S-0 '63. (MIRA 16:12)

MAKSEOV, Matvey Vasil'yevich; GIKHIN, Gennadiy Ivanovich;  
GUTKIN, L.S., prof., rezensent; YEREMOV, V.K., inzh.,  
rezensent; LYUBIMOVA, T.M., red.

[Radio guidance of missiles] Radioupravlenie raketami.  
Moskva, Izd-vo "Sovetskoe radio," 1962. 643 p.  
(MIRA 18:1)

ACCESSION NR: AP4026144

S/0108/64/019/003/0003/0018

AUTHOR: Gutkin, L. S. (Active member)

TITLE: Potential accuracy of single-channel and multichannel signal-parameter meters

SOURCE: Radiotekhnika, v. 19, no. 3, 1964, 3-18

TOPIC TAGS: electric signal, signal parameter, signal parameter meter, radio direction finder, multichannel radio direction finder

ABSTRACT: Well-known information about signal-parameter measurements is systematized and generalized to cover the case of a complex measurement when, rather than the input-signal parameter  $\lambda(t)$ , a function  $\lambda_1(t)$  is to be measured, the latter being connected with the signal parameter by a linear operational relation  $\lambda_1(t) = D(p) \lambda(t)$ , where  $p = d/dt$  is the differential operator. Cases of indirect modulation, complex signal measurement, and doppler frequency shift

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ACCESSION NR: AP4026144

measurement are considered. Automatic target tracking in a conical-scanning system is given as an example of determining the max accuracy of measurement. The effect of signal fluctuation on the max accuracy of its parameters is also analyzed. Orig. art. has: 6 figures and 72 formulas.

ASSOCIATION: Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 06Oct62

DATE ACQ: 16Apr64

ENCL: 00

SUB CODE: EC, NG

NO REF SOV: 005

OTHER: 000

Card 2/2

ACCESSION NR: AP4029457

S/0108/64/019/004/0019/0027

AUTHOR: Gutkin, L. S. (Active member)

TITLE: Potential accuracy of single-channel and multichannel signal-parameter meters. Part 2. Multichannel meters

SOURCE: Radiotekhnika, v. 19, no. 4, 1964, 19-27

TOPIC TAGS: electric signal, signal parameter, signal parameter meter, radio direction finder, multichannel radio direction finder

ABSTRACT: The results obtained in Part 1 of this article (Radiotekhnika, 1964, v. 19, no. 3, pp. 3-18) are generalized to cover the case of multichannel meters where the same measurand parameter is contained in  $n$  signals applied together with their noise to the inputs of  $n$  channels of the meter. Formulas are developed for the potential accuracy of (a) a 2-channel direction finder with 2 antennas forming an amplitude-type equisignal zone; (b) a 2-channel phase-type

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ACCESSION NR: AP4029457

direction finder; and (c) a multichannel direction finder with a phased array.  
Orig. art. has: 3 figures and 39 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi  
(Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 06Oct62

DATE ACQ: 30Apr64

ENGL: 00

SUB CODE: EC

NO REF SOV: 006

OTHER: 000

Card 2/2

L 63201-65 EEO-2/ENT(d)/EEO-h/EEO-2 BC

ACCESSION NR: AP5016078

UR/0108/65/020/006/0052/0063 34  
621.396 32

AUTHOR: Gutkin, L. S. (Active member) 3

TITLE: Real and potential accuracies of direction finding compared. Part 1 --  
cw signals

SOURCE: Radiotekhnika, v. 20, no. 6, 1965, 52-63

TOPIC TAGS: direction finding, direction finding accuracy

ABSTRACT: <sup>55</sup> A direction finder <sup>9</sup> operating as an automatic angle-coordinate-tracking device is considered. Although the analysis refers to the conic-scanning system, most results remain applicable to other d-f systems (e.g., to a two-channel momentary-amplitude-comparison system). The effect of uncertainty (at the receiver) of the initial phase and frequency of a sinusoidal cw signal and its amplitude fluctuation upon the d-f accuracy is explored. It is proven that, with the initial cw-signal phase uncertain, the highest (near ideal) accuracy can be

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ACCESSION NR: AP5016078

obtained by using a linear filter that has a special frequency characteristic and a quadratic detector for isolating the error signal. With both frequency and initial phase unknown, the signal-to-noise ratio is estimated which ensures attainability of the maximum accuracy. Finally, formulas are developed for the d-f accuracy when a fluctuating cw signal is received (internal noise in the receiver). Although the analysis has been made for a quadratic detector, it is assumed that the results will be approximately true in the case of a linear detector. Orig. art. has: 10 figures and 80 formulas.

ASSOCIATION: Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektrosvyazi  
(Scientific and Technical Society of Radio Engineering and Electromunication)

SUBMITTED: 16Mar64

ENCL: 00

SUB CODE: DC, NG

NO REF SOV: 002

OTHER: 000

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Card 2/2

L 08956-67 EWT(d)

ACC NR: AP6021919 (A) SOURCE CODE: UR/0108/66/021/003/0063/0068

AUTHOR: Gutkin, L. S. (Active member of the society) 47

ORG: Scientific and Technical Society of Radio Engineering and Electro-communication im. A. S. Popov (Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektrosvyazi)

TITLE: Real and potential accuracies of direction finding compared. Part 2 - Pulse signals 9

SOURCE: Radiotekhnika, v. 21, no. 3, 1966, 63-68

TOPIC TAGS: direction finding, direction finder, *pulse signal*

ABSTRACT: This is a continuation of the author's article printed in "Radio-tekhnika," 1965, v. 20, no. 6. A direction finder automatically tracking its objective is theoretically analyzed; the effect of the incoherence of signal pulses

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UDC: 621.396

Card 2/2 nst

ZOROKHOVICH, Aleksandr Yefimovich; KRYLOV, Sergey Kononovich; GUTKIN, I. V.,  
kandidat tekhnicheskikh nauk, redaktor; VERINA, G. P., tekhnicheskii  
redaktor

[Principles of electric engineering for locomotive brigades] Osnovy  
elektrotekhniki dlia lokomotivnykh brigad. Moskva, Gos.transp.  
zhel-dor. izd-vo, 1957. 453 p. (MLRM 10:2)  
(Electric engineering) (Locomotives)

GUTKIN, L.V., kandidat tekhnicheskikh nauk; SHTEYNBERG, L.D., inzhener.

Repairing locomotive engines on the British railroads. Elek.1  
tepl.tinga no.9:45-47 S '57. (MIRA 10:10)  
(Great Britain--Locomotives--Repairs)

GUTKIN, L.V., kandid<sup>at</sup> tekhnicheskikh nauk.

New ways of machining pairs of locomotive wheels without rolling.  
Zhel.dor.transp. 39 no.2:89-90 # '57. (MIRA 10:3)  
(United States--Car wheels)

GUTKIN, Lev Vladimirovich; NIKANOROV, Viktor Aleksandrovich; KOFMAN, David Borisovich; OZEMBLOVSKIY, Ch.S., inzh., red.; SIDOROV, N.I., inzh., red.; KHITROV, P.A., tekhn. red.

[Repair of electric rolling stock; mechanical part] Remont elektro-  
podvizhnogo sostava; mekhanicheskaya chast'. Moskva, Gos. transp.  
zhel-dor. izd-vo, 1958. 347 p. (MIRA 11:7)  
(Electric railroads--Rolling stock--Maintenance and repair)

GUTKIN, L.V., kand. tekhn. nauk.

Basic trends in the growth of railroad electrification in the  
U. S. A. Elek. i tepl. tiaga 2 no.1:44-45 Ja '58. (MIRA 11:3)  
(United States--Railroads--Electrification)

GUTKIN, L.V., kand. tekhn.nauk; SHLYAKHTO, P.N., dots., kand. tekhn.nauk.

Heat calculations for electric railway motors. Trudy MIIT no.103:  
150-159 '58. (MIRA 11:12)

(Electric railway motors)

GUTKIN, L.V., kand.tekhn.nauk

New insulation materials for the traction motors. Elek.i  
tepl.tiaga 3 no.10:46-47 0 '59. (MIRA 13:2)  
(Electric railway motors)  
(Electric insulators and insulation)

KUMSKOV, V.T., kand.tekhn.nauk; KONAKOV, P.K., doktor tekhn.nauk;  
NIKITIN, Ye.A., inzh.; AKSENOV, K.F., kand.tekhn.nauk;  
GUTKIN, L.V., kand.tekhn.nauk; BOBROVA, Ye.N., tekhn.red.

[Thermal processes in electric and diesel locomotives] Teplo-  
nye protsessy teplovozov i elektrovozov. Moskva, Vses.izda-  
tel'sko-poligr.ob"edinenie M-vs putei soobshchenia, 1960. 178 p.  
(MIRA 13:11)

(Diesel locomotives)

(Electric locomotives)

MIKHEYEV, A.P., prof., doktor tekhn. nauk; SHUKSTAL', Ya.V., kand. ekon. nauk; DMITRIYEV, V.A., kand. ekon. nauk; Prinsipalni uchastiye GUTKIN, L.V., kand. tekhn.nauk; SHVARTS, R.Ya., mladshiy nauchnyy sotr.; GORINOV, A.V., retsenzent; MIKHAL'TSEV, Ye.V., prof., retsenzent; GIBSHMAN, A.Ye., prof., retsenzent; RYLEYEV, G.S., inzh., retsenzent; KHACHATUROV, T.S., red.; MAKSIMOV, I.S., red.; GERASIMOVA, Ye.S., tekhn. red.

[Efficiency of electric and diesel traction in railroad transportation] Effektivnost' elektricheskoi i teplovoznoi tiagi na zheleznodorozhnom transporte. Pod red. T.S.Khachaturova i A.P.Mikheeva. Moskva, Gosplanizdat, 1960. 302 p. (MIRA 16:1)

1. Nauchnyye sotrudniki Otdela razvitiya tekhnicheskikh sredstv transporta i Otdela raspredeleniya perevozok mezhdru razlichnymi vidami transporta Instituta kompleksnykh transportnykh problem Akademii nauk SSSR (for Mikheyev, Shukstal', Dmitriyev). 2. Chlen-korrespondent Akademii nauk SSSR (for Gorinov, Khachaturov).  
(Electric railroads) (Diesel locomotives)

GUTKIN, Lev Vladimirovich; NIKANOROV, Viktor Aleksandrovich; KOFMAN, David Borisovich; YAKOVLEV, D.V., inzh., red.; BOBROVA, Ye.N., tekhn.red.

[Repair of electric trains; electrical section] Remont elektro-podvizhnogo sostava; elektricheskaya chast'. Moskva, Vses. izdatel'sko-poligr.ob'edinenie M-va putei soobshchaniya, 1960. 331 p. (MIRA 13:11)

(Electric locomotives--Maintenance and repair)

GUTKIN, L.V., kand.tekhn.nauk

Fuel cells. Elek.i tepl.tiaga 5 no.11:47-48 N '61.

(MEMO 14:11)

(Fuel cells)

(Electric railroads)

GUTKIN, L.V., kand.tekhn.nauk

High-speed land transportation. Elek. i topl. tiaga no.6:44~45  
Je '62. (MIRA 15:7)

(Ground effect machines)

GUTKIN, L.V., kand. tekhn. nauk

Linear asynchronous engine for train traction. Elek. i  
tepl. tiaga 7 no.10:37-39 0 '63. (MIRA 16:11)

S/122/60/000/001/015/018  
A161/A130

1.8000 2908

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AUTHORS: Kondashevskiy, V. V.; Chertovskikh, A. N.; - Candidates of  
Technical Sciences, Docents; Pogorelyy, V. S.; Gutkin, M. A.;  
- Engineers

TITLE: Part dimension control in grinding process with the use of radio-  
isotope pickups

PERIODICAL: Vestnik mashinostroyeniya, no. 1, 1960, 67-70

TEXT: The authors have designed and tested a radioactive isotope pickup  
being safe for the machine tool operator and measuring with high accuracy. The  
pickup design is illustrated (Fig. 1) and its electric circuit described. The  
rod (1) of the pickup is moved down by the spring (2). The short horizontal arm  
of the lever (3) is inserted into a slot in the rod; a steel gate (4) is fixed  
on the long (vertical) arm of the lever (3). The ratio of the lever arms is 10:1.  
Thorium isotope emitting alpha-rays (6) is placed in a container (5) under the  
gate. A diaphragm (7) with 0.4 x 15 mm slit is attached above the diaphragm,  
with the long side parallel to the gate edge, and a Geiger counter (8) over the  
diaphragm. The closing of the diaphragm, and hence the alpha-radiation intensity,

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Part dimension control ...

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is controlled by the lever with the gate when the measuring rod moves. The Geiger counter is connected to an electric system, and works on mean current. A load resistor and a capacitor form an integrating circuit. The voltage on the load resistor is proportional to the radiation intensity and measured with a cathode voltmeter with a double 6H8 (6N8) triode, a microamperemeter (for 100 microampere), and a relay. The microamperemeter scale is graduated in microns, and the changing workpiece size is visible on the scale. The relay switches on a signal lamp and gives stopping command at the moment when the set workpiece dimension is reached. The rectifiers feeding the cathode voltmeter and the counter are built of semiconductors; voltage is stabilized with CГ1П (SG1P) stabilivolts. The pickup time constant is controlled by switching over the capacitance in the 6N8 tube grid circuit. The pickup has been tested in grinding smooth and spline shafts on circular grinders. In grinding smooth shafts (Fig.3), the pickup (1) with the counter was placed in the measuring attachment frame (2) so that the measuring tip (3) contacted the rod (4) of the attachment (this rod is suspended on two leaf springs, 5). The helical spring (6) brings the rod (4) into contact with the shaft being ground. The tips (7) and (8) are fixed on the adjustable hanger (9). The travel up and down of the rod (4) is limited with the screw (10) entering a conical indentation on it. The mechanism is protected

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with two shielding plates (11). The whole device is hinged by the bushing (12) on the grinding wheel hood. The grinder was not stopped automatically in tests (the machine is not suitable for it). The pickup installed in the measuring device (Fig. 3) shows the average dimension values, and this is its important advantage, for the hand of a galvanometer connected to it moves evenly, even during strong wobbling of the workpiece and vibration of the machine (conventional dial indicators react to vibration and wobbling). This feature makes radioisotope pickups very handy in machining spline shafts or other parts with interrupted surface. The electric system of the described pickup gives only one command - for stopping the machine, but more commands are needed frequently. The authors have developed one giving three commands: 1) Switch-over from rough to finish grinding; 2) Switch-over from finish grinding to walking out; 3) Stopping the machine finally. Its galvanometer has two scales - a rough with 0.5 to 2 micron divisions, and an accurate with divisions from 2.5 to 10 micron, switch-over from one to the other is automatic. In comparative laboratory tests the radioisotope pickups proved on par by accuracy with the best inductive pickups and much more accurate than the other. The electric system of the radioisotope pickups is not more complex than that of the inductive pickups, and they cost less. Their size can be further reduced. It is concluded that they are suitable

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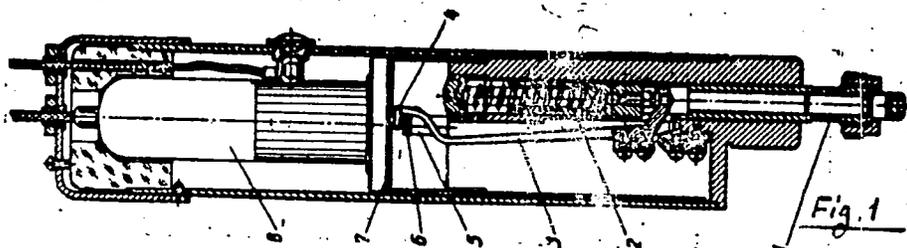
Part dimension control ...

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for application in automatic grinding process control systems, and radioisotope pickups for shop application are the first in the USSR. The only analogous pickup with alpha-ray source existing abroad is designed for laboratory check of Johanson blocks, and its design is different; it had been described in "Electronics", April 1948, 82. There are 6 figures.

Fig. 1:



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GUTKIN, N.

The motorcycle stops swallowing dust. Za kul. 21 no. 7:21 J1  
'63. (MIRA 16:8)

1. Nachal'nik konstruktorskogo otdela Tsentral'nogo konstruktorsko-  
eksperimental'nogo byuro mototsiklostroyeniya.  
(Motorcycles--Engines)

1. GUTKIN N.G.
2. USSR (600)
4. Timothy Grass
7. Practice of stubble and late summer sowing of red clover and timothy. Dokl. Ak.sel'khoz 18 no.11, 1952.

9. Monthly List of Russian Accessions. Library of Congress, April 1953, Uncl.

GUTKIN, N. G.

USSR/Physics - Electrical Conductivity, Aug 52  
Glass

"Surface Electrical Conductivity of Glass in a Humid Atmosphere," N. G. Gutkin, K. S. Yevstrop'yev, A. Ya. Kuznetsov

"Zhur Tekh Fiz" Vol 22, No 8, pp 1318-1324

Measures surface cond of a number of tech glasses in relation to humidity and temp. Results showed that surface cond in humid atm rises by a factor of 3-5, and at const temp the max rise occurs in a humidity range of 30-80%. With increasing temp the cond rises, the thermal coeff varying from 2 to 4%.

Received 2 Oct 51.

226T98

60774 83  
Translation from: Referativnyy Zhurnal, Elektrotehnika, 1957, Nr 2, p.101 (USSR) 112-2-3222

AUTHOR: Gutkin, R.A.

TITLE: The Problem of Frequency Controlled Automatic Emergency Load-Shedding  
(K voprosu ob avtomaticheskoy avariynoy razgruzke po chastote)

PERIODICAL: Tr. Dal'nevost. politekhn. in-ta, 1954, Nr 43, pp. 199-211

ABSTRACT: The derivation is given of basic equations characterizing the dynamics of frequency change in transient conditions caused by a sudden loss of active power in the power system. It has been demonstrated that automatic emergency unloading by frequency relays alone can, as a result of disconnection of the preceding load turn, cause the frequency to become inadmissably low, but higher than the frequency for the setting of the following load turn. Then unloading ceases. When unloading conditions are favorable, the unloading process may become inadmissably long. A method of unloading using a single frequency relay feeding a pulse to several time relays is recommended to correct these defects. A difference in time relay setting of not more than one second is suitable. This will shorten the whole unloading process and speed up the process of frequency restoration. In case of the emergence of large power deficiencies, it is wise to have an additional frequency relay with a lower setting which would feed a pulse to cut out several load sequences simultaneously. A schematic diagram of the installation is given along with an example of calculations for tuning it by the proposed method.

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GOROKHOVSKIY, D.M.; GUTKIN, S.G.; ZISLIN, S.G.; KUZNETSKIY, K.D.;  
PELYUSHENKO, O.I.; POPOV, B.N.; YAKUBOVICH, I.Ye.;  
PROSVIRNIN, A.D., otv. red.; KNYAZEV, V.V., red.;  
YUNISOVA, M.I., tekhn. red.

[Motor vehicles manufactured at the Gorkiy Automobile Plant]  
Avtomobili Gor'kovskogo zavoda. Gor'kii, Gor'kovskoe knizh-  
noe izd-vo, 1963. 390 p. (MIRA 16:4)

1. Glavnyy konstruktor Gor'kovskogo avtozavoda (for Prosvirnin).  
(Gorkiy--Motor vehicles)

GUTKIN, S.T.; SEMENENKO, P.A., inzh., red.; GVIRTS, V.L., tekhn.red.

[Design of attachments permitting repeated setting up of lathes for work on a series of items] Konstruktsii prisposoblenii, dopuskaiushchikh perenaladku na gruppu detalei. Leningrad, 1955. 7 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Informatsionno-tekhnicheskii listok, no.96(784)) (MIRA 10:12)  
(Lathes--Attachments)

RYBINSKIY, Dmitriy Alekseyevich; MOROZOV, Yuriy Aleksandrovich; GUTKIN,  
Samuil Grigor'yevich; KONEV, B.F., inzh., retsenzent; STRCKINA,  
T.I., red.; UVAROVA, A.F., tekhn. red.

[Caruretors of the GAZ engines] Karbiuratory dvigatelei GAZ. Moskva,  
Mashgiz, 1962. 254 p. (MIRA 15:7)  
(Automobiles--Engines--Carburetors)

GUPKIN, S. T.

"Universal Quick-acting Pneumatic Fixtures for Metal-cutting Machine Tools"

The Kirov District of Leningrad Strives for Technological Progress; Collection of Articles, Leningrad, Sudpromgiz, 1957. 171pp.

This collection of articles describes the progressive experience of the industrial plants of the Kirov district of the city of Leningrad in the fields of shipbuilding, machine building, instrument-making, casting, hydrolytic and other industries. New manufacturing methods are discussed.

25(5)

AUTHOR:

Gutkin, S.T., Engineer

SOV/117-59-2-15/27

TITLE:

Group Pneumatic Devices for the Machining of Fittings  
(Grupповyye pnematcheskiye prisposobleniya dlya obrabotki  
detaley armatury)

PERIODICAL:

Mashinostroitel', 1959, Nr 2, pp 25-28 (USSR)

ABSTRACT:

The author describes several typical pneumatic devices used in the group production of small fittings for pipelines. No innovations, no personalities and no organizations are mentioned in the text. There are 7 sets of diagrams and 1 photo.

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PHASE I BOOK EXPLOITATION SOV/5676

Azarov, A. S., Candidate of Technical Sciences, Docent, ed.

Prisposobleniya dlya gruppovoy obrabotki detaley; opyt nekotorykh leningradskikh zavodov (Equipment for Group Machining of Machine Parts; Experience of Certain Leningrad Plants) [Leningrad] Lenizdat, 1960. 254 p. 3,000 copies printed.

Scientific Ed.: P. I. Bulovskiy, Doctor of Technical Sciences, Professor; Ed.: A. E. Lepin; Tech. Ed.: R. G. Pol'skaya.

PURPOSE: This collection of articles is intended for technical personnel and skilled workers in machine and instrument plants; it may also be used by students in schools of higher technical education and tekhnikums.

COVERAGE: Basic principles in the design of universal, universal-setup, and group-machining jigs and fixtures are stated. This equipment is also considered from the standpoint of its application in several Leningrad machine and instrument plants.

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... are given for the machining of (Cont.)  
group-machining or special processing of parts according to  
regimes in parts machining, fixture design, and cutting  
effectiveness of various types of jigs and fixtures are in-  
cluded in some of the articles. No personalities are in-  
There are no references.

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Foreword

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Card 2/3

GUTKIN, Semen Timofeyevich, inzh.; SHAMANIN, A.V., inzh., red.; VASIL'YEV, Yu.A., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Designing attachments for precision; verbatim report of a lecture] Raschety prisposoblonii na tochnost'; stenogramma lektsii. Leningrad, 1962. 36 p. (MIRA 15:8)  
(Machine tools---Attachments)

GUTKIN, S.T.

Standardization of the machining of pipe fittings. Mashino-  
stroitel' no.6:32-34 Je '63. (MIRA 16:7)

(Pipe fittings)

GUTKIN

USSR/Nuclear Physics - Structure and Properties of Nuclei.

C-4

Abs Jour : Ref Zhur - Fizika, No 4, 1957, 8706

Author : Demirkhanov, R.A., Gutkin, T.I., Dorokhov, V.V.,  
Rudenko, A.D.

Inst :

Title : Masses of Isotopes H, D, He<sup>4</sup> and C<sup>12</sup>

Orig Pub : Atom. energiya, 1956, No 2, 21-27

Abstract : A new exact measurement of the masses of the atoms H, D, He<sup>4</sup> and C<sup>12</sup> has been made. The measurements were carried out with a mass spectrograph developed by Ardennet with the participation of Eger and the authors of this work. The apparatus has double focusing by means of electric and magnetic fields, effected respectively by cylindrical capacitor and a sector magnet. The iron beam is created by a plasma source with single contraction of the discharge. Recording of the mass spectrum is photographic; "Schumann" plates are used. There

Card 1/3

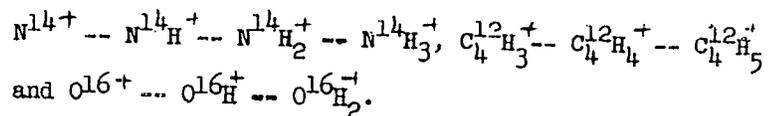
USSR/Nuclear Physics - Structure and Properties of Nuclei.

C-4

Abs Jour : Ref Zhur - Fizika, No 4, 1957, 8706

is the possibility of visually observing the spectrum with the aid of an ion-optical converter.

The maximum resolution of the instrument is 100,000 -- 120,000, and the dispersion (roughly calculated) is not less than 2.34 cm percent of relative mass difference. The calibration of the scale of the masses of the instrument is made using photographs of certain basic lines, namely those of the groups



The masses of the atoms H, D, He<sup>4</sup> and C<sup>12</sup> were found from photographs of the doublets H<sub>2</sub> -- D, D<sub>2</sub> -- H<sup>4</sup>, D<sub>3</sub> -- 1/2

C<sup>12</sup>H<sub>4</sub> -- O<sup>16</sup>. The results are:

Card 2/3

USSR/Nuclear Physics - Structure and Properties of Nuclei.                      C-4

Abs Jour    :    Ref Zhur - Fizika, No 4, 1957, 8706

H --  $1.008142 \pm 10^{-6}$ , He<sub>4</sub> --  $4.003872 \pm 4 \times 10^{-6}$ ,

D --  $2.014736 \pm 2 \times 10^{-6}$ , and C<sup>12</sup> --  $12.003820 \pm 5 \times 10^{-6}$ .

The data obtained are in agreement with the values determined from the energy balance of the nuclear reactions.

Card 3/3

619  
MASSES OF THE H, D, He<sup>4</sup>, AND C<sup>12</sup> ISOTOPES. B. A. Demichkharov, T. I. Gutkin, Y. V. Dorokhov, and A. D. Budenko. Soviet J. Atomic Energy, No. 2, 163-64 (1954).

Results are given of the measurements of the masses of the H, D, He<sup>4</sup> and C<sup>12</sup> isotopes carried out by means of a mass spectrometer with a resolving power of 70,000 to

100,000. The data obtained agree well with the corresponding mass values obtained from the energy balance of nuclear reactions. (auth)

LPH

AUTHOR: DEMIRKhanov, P.A., GUTKIN, P.I., DOROKHOV, V.V. ~~SECRET~~  
 TITLE: The Mass of the He<sup>3</sup>-Isotope. (Massa izotopa He<sup>3</sup>, Russian) 89-5-10/22  
 PERIODICAL: Atomnaia Energiia, 1957, Vol 2, Nr 5, pp 469-470 (U.S.S.R.)

ABSTRACT: A mixture of helium isotopes enriched up to 99,5% with He<sup>3</sup> was used for the spectroscopic mass determination of He<sup>3</sup>. For measuring H<sup>3</sup>-He<sup>3</sup> and HD-He<sup>3</sup> doublets were used. The experimental arrangement and treatment have previously been described (Atomnaia Energiia Nr 2, 21, 1956). The result, 3,016970 ± 2 was compared with the values obtained by other authors from nuclear reactions. The closest agreement is with G. GREFITS, J. WARREN, Phys.Rev. 92, 1084, 1953. (1 Illustration, 2 Tables, 8 References).

ASSOCIATION: Not given  
 PRESENTED BY:  
 SUBMITTED: 29.12.1956  
 AVAILABLE: Library of Congress  
 Card 1/1

RUSSIAN

AUTHOR

DEMIKHANOV R.A., GUTIN E.M., DOROKHOV V.V.

TITLE

On the Masses of the Isotopes C<sup>13</sup>, N<sup>14</sup>, and N<sup>15</sup>.  
(Massy isotopov C<sup>13</sup>, N<sup>14</sup>, i N<sup>15</sup> Russian)

PERIODICAL

Atomnaya Energiya, 1957, Vol 2, Nr 6, pp 544-551 (U.S.S.R.)

ABSTRACT

The present paper gives the results of new mass-spectrographical measurements of the masses of the isotopes C<sup>13</sup>, N<sup>14</sup>, and N<sup>15</sup>. Several causes of systematical errors of measuring were eliminated or at least taken into account. The mixtures of gas used for the experiments were enriched by these rare isotopes. The adjustment of the measuring order is discussed in detail.

measuring results. The mass of the isotope N<sup>14</sup> was measured simultaneously in the following doublets: N<sup>14</sup>H<sub>2</sub>-C<sup>16</sup>, N<sup>14</sup>C<sup>12</sup>O<sup>16</sup>, N<sup>14</sup>C<sup>12</sup>H<sub>2</sub>-N<sup>14</sup>H<sub>2</sub>-C<sup>12</sup>H<sub>2</sub>, C<sup>12</sup>O<sup>16</sup>-C<sup>12</sup>N<sup>14</sup>H<sub>2</sub>.

The values ΔM obtained for these doublets are given in a table. A mean value 13.007523 ± 3 is obtained. The mass of the isotope C<sup>13</sup> was determined from the doublet C<sup>13</sup>H<sub>2</sub>-C<sup>12</sup>H<sub>2</sub> and C<sup>13</sup>H<sub>2</sub>-C<sup>12</sup>H<sub>2</sub>. The corresponding values of ΔM are shown in a table. The mean value amounts to 13.007491 ± 3. The mass of the isotope N<sup>15</sup> was determined from the doublet

N<sup>15</sup>H<sub>2</sub>-C<sup>12</sup>H<sub>2</sub>, N<sup>15</sup>H<sub>2</sub>-N<sup>14</sup>H<sub>2</sub>, N<sup>15</sup>C<sup>12</sup>H<sub>2</sub>, N<sup>15</sup>N<sup>14</sup>H<sub>2</sub>; its mean value amounts to 15.004896 ± 4. Several photographs of the mass spectrographical doublets are cited.

Card 1/2

On the Masses of the Isotopes  $N^{13}$ ,  $N^{14}$ , and  $N^{15}$

Discussion of Results. Agreements and deviations between the results of the present paper and the results found by other authors are shown in the present paper and the results agreeing with it which were obtained by T. Solomon, K. Quisenberry, A. H. J. Phys. Rev. Vol. 102, No. 4, p. 1076 (1956) the conditions for "inner agreement" are satisfactory.

Such an agreement, and even for results which were obtained by means of different apparatus, confirms the reliability of these results. In conclusion some sources of errors are discussed. (2 illustrations and 15 tables.)

ASSOCIATION Not Given.  
PRESENTED BY  
SUBMITTED 29.12.1956.  
AVAILABLE Library of Congress.  
Card 2/2

GUTKIN, T. I.

AUTHOR: Gutkin, T.I.

120-5-10/35

TITLE: Errors in the Mass-spectrographic Method of Measuring the Mass of Isotopes (Oshibki mass-spektrograficheskogo metoda izmereniya mass izotopov)

PERIODICAL: Pribery i Tekhnika Eksperimenta, 1957, No. 5, pp. 46 - 51 (USSR).

ABSTRACT: By measuring the mass of isotopes, one obtains directly the binding energy of nucleons in the nucleus. However, in this method, the mass of the isotopes must be determined to an extremely high degree of accuracy. For example, in order to determine changes in the binding energy of nuclei in the region of magic numbers (mass number greater than 100) with an accuracy of 5%, the accuracy of mass measurement must be such that the ratio  $\delta m/m$  must be of the order of  $10^{-6}$ . However, existing measurements lie well outside this figure. Differences between the results of mass-spectrographic measurements indicate the presence of unknown systematic errors due to some properties of the ion-optical systems with double focussing. Such focussing is obtained in mass spectrographs by a combination of electrostatic and magnetic cylindrical lenses. In order to satisfy the focussing conditions with respect to the velocities, the parameters of the ion-optical systems of mass-spectrographs

Card 1/3

Errors in the Mass-spectrographic Method of Measuring the Mass of Isotopes. 120-5-10/35

must be chosen so that the dispersion of the electrostatic and magnetic lenses are equal. Because of space charge effects, such an ideal focussing with respect to velocities is not obtained. This sometimes causes a change in the position and size of the ion-optical image on the screen of the mass-spectrograph and therefore also systematic errors in the mass of the isotopes. The present author has studied the effect of the space charge of the beam on the focussing conditions and the systematic errors in the mass of the isotopes due to this effect. Fig. 1 shows the ion-optical system under consideration (double focussing). The displacement of a line for such a system due to the beam space charge effect is obtained by solving the equation of motion of the ions in the field of the electrostatic and magnetic lenses. An explicit expression is obtained for this shift in terms of the magnitudes of the fields and the various geometrical parameters involved. It is shown that the beam space charge effect leads not only to a displacement of the cardinal points of the ion optical system, but also to a change in the dispersion properties of its various sections and thus causes systematic errors. It is shown that the magnitude of the systematic error is well outside the quoted accuracy of

Card2/3

24(5)

AUTHORS:

Demirkhanov, R. A., Gutkin, T. I.,  
Dorokhov, V. V.

SOV/56-55-4-15/92

TITLE:

Nuclear Bond Energy in the Region of the 82 Proton and 126  
Neutron Magic Numbers (Energija svyazi yadern  
v oblasti magic'kh chisl ot 82 po protonam 82 i neytronam  
126)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1970,  
pp 917 - 929 (USSR) ЖЭТФ, No. 4

ABSTRACT:

The authors of the present paper report on rich ex-  
perimental material which is arranged in a clear manner  
in tables. By means of a mass spectrograph (resolving  
power 60000-80000, description in references 4,5)  
the masses of the following isotopes were measured:  
Lead: Pb 204, 206, 207 and 208 (Table 2)  
Mercury: Hg 198, 199, 200, 201, 202 and 204 (Table 3)  
Thallium: Tl 203 and 205 (Table 4)  
Bismuth: Bi 209.  
Determination of masses was carried out by direct  
comparison with the masses of the corresponding

Card 1/3

Nucleon Bond Energy in the Region of the 82 Proton and  
126 Neutron Magic Numbers

09/30/01-4-13/01

organic compounds, as e.g. for  
Pb 204 -  $C_{16}H_{12}$ , Pb 208 -  $C_{14}H_8O_2$ , Hg 199 -  $C_{13}H_{11}O$ ,  
Hg 204 -  $C_{16}H_{12}$ , Tl 203 -  $C_{16}H_{11}$ , Tl 205 -  $C_{16}H_{13}$ ,  
Bi 209 -  $C_{14}H_{13}N_2$ . The masses for the various isotopes  
are given up to 6 decimals, data given are accurate  
up to 3-4 decimals. From mass measurements the nucleon  
bond energies in the nucleus are calculated. The results  
obtained indicate a shell structure of the nucleus  
with a well-filled shell of 82 protons and 126 neutrons.  
The difference of the nuclear bond energy for an even  
and odd number of nucleons in the nucleus and its  
smoothing out as the shell is filled up can distinctly  
be seen. After the shell is filled up with  $Z=82$   
and  $N=126$ , the bond energy of the next neutron is  
higher than that of the next proton. The energy of  
two bound neutrons (which yields the Hg 204 nucleus)  
is greater than the energy of attachment of two  
protons in the formation of the Pb 204 nucleus. The authors  
thank Ye.Ye.Baroni, T.H.Lebadze, K. A.

Card 2/3

Nuclear Bond Energy in the  $^{126}\text{Xe}$  Proton and  $^{126}\text{Xe}$  Neutron Magic Number 126  
126 Neutron Magic Number 126  
126-35-4-13/52

Kovyrzina and V.M.Shonkova for placing the metallographic compounds and the heavy hydrogen at their disposal, and they also express their gratitude to P.S.Brostyuk, N.I. Dzkuya and G.A.Dorokhova for their practical help. There are 2 figures, 9 tables, and 10 references, 4 of which are Soviet.

SUBMITTED: May 17, 1958

Card 3/3

AUTHORS: Demirkhanov, R. A., Gutkin, T. I., 20-118-6-14/43  
Dorokhov, V. V.

TITLE: Masses of Lead Isotopes (Massy izotopov svintsa)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 6,  
pp. 1103-1104 (USSR)

ABSTRACT: The present paper reports on the results of the measuring of the masses of lead isotopes  $Pb^{204}$ ,  $Pb^{206}$ ,  $Pb^{207}$  and  $Pb^{209}$ . These measurements were carried out in connection with the determination of the binding energy of the nucleons in a nucleus in the range of the magic numbers 82 and 126 with respect to the protons and with respect to the neutrons, respectively. All this is connected with the necessary exact definition of the mass of the isotope  $Pb^{208}$  which is used as base value for the computation of the masses of heavy isotopes with

$$z \geq 82$$

from the data of the nuclear reactions. The measurements were carried out by means of a device described already earlier by the same authors (ref 1). The dissolving power

Card 1/3

.. Masses of Lead Isotopes

20-118-6-14/43

of this device amounted in this region to 60,000 - 80,000. In order to increase the accuracy of the measurements the masses of the lead isotopes were determined by immediate comparison with the corresponding mass of hydrocarbons which contain the isotopes  $H^1$ ,  $C^{12}$  and  $O^{16}$ . The values obtained here were controlled by the determination of the mass of the lead isotope from various doublets and by the production of lead ions from various compounds. Each value  $\Delta M$  of the doublet was determined by treatment of 18-20 mass spectrograms (which were photographed on different plates). The results of the measurements are given in a table. Following is shown by the data of this table: Within the measuring error limits a satisfying "inner" connection exists between the mass values detected from various doublets. The results found here confirm the absence of systematic measuring faults and the reliability of the data obtained here. Finally the differences between the present measurements and the earlier ones are pointed out in short.

Card 2/3

Masses of Lead Isotopes

20-118 -6-14/43

There are 3 tables and 4 references, 2 of which are Soviet

PRESENTED: September 26, 1957, by L. A. Artsimovich, Member of the  
Academy of Sciences, USSR

SUBMITTED: July 5, 1957

Card 3/3

21(7), 21(1)

AUTHORS: Demirkhanov, R. A., Gutkin, T. I., SOV/56-36-5-52/76  
Dorokhov, V. V.

TITLE: The Mass of the Isotope Pu<sup>239</sup> (Massa izotopa Pu<sup>239</sup>)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,  
Vol 36, Nr 5, pp 1595-1596 (USSR)

ABSTRACT: Already in a number of previous papers the authors reported on the mass determinations of lead and uranium isotopes, and they also described the mass-spectrometric device used for these measurements (Refs 1, 3, 4). In the present "Letter to the Editor" they give a report on measurements carried out with Pu<sup>239</sup> by means of this spectrometer, which has a resolving power of 60,000 - 80,000. For mass determination doublets of various organic compounds were used, which consisted of the already exactly known elements H, C<sup>12</sup> and O<sup>16</sup>, viz. alizarin (C<sub>14</sub>H<sub>8</sub>O<sub>4</sub>, M = 240) and perilen (C<sub>20</sub>H<sub>12</sub>, M = 252). Ion formation occurred in an arc discharge in helium, the pairs Pu<sup>239</sup> - organic compound

Card 1/3

The Mass of the Isotope Pu<sup>239</sup>

SOV/56-36-5-62/76

were introduced into the discharge by evaporation from special crucibles. The mass differences  $\Delta M$  of the doublet and the corresponding mass values of Pu<sup>239</sup> are:

| doublet   | M [mME]      | mass of Pu <sup>239</sup> [ME] |
|---|--------------|--------------------------------|
| Pu <sup>239</sup> - C <sub>14</sub> H <sub>7</sub> O <sub>4</sub> | 18.448±0.082 | 239.128922±92                  |
| C <sub>19</sub> H <sub>11</sub> - Pu <sup>239</sup>               | 33.447±0.067 | 239.128695±74                  |

The mass of Pu<sup>239</sup> calculated from nuclear reactions gives 239.128025±155 if a correction of the more accurately

known value of Pb<sup>208</sup> is taken into account, and 239.126999±150 if this correction is not taken into account. It is found that the difference of the masses of

Pu<sup>239</sup> and U<sup>238</sup> calculated according to the authors' data, when compared with the data obtained from nuclear reactions, amounts to only 0.166±0.250 mME, i. e. that it is still within the limits of errors. It is therefore assumed that the error of ~1 mME is due to an inaccurate Q-value.

Card 2/3

The Mass of the Isotope Pu<sup>239</sup>

SOV/56-36-5-62/76

There are 1 table and 4 references, 3 of which are Soviet.

SUBMITTED: February 2, 1959

Card 3/3

21(8)

AUTHORS: Demirkhanov, R. A., Gutkin, P. I., SOV/20-124-2-16/71  
Dorokhov, V. V.

TITLE: The Masses of the Isotopes Th<sup>232</sup>, U<sup>234</sup>, U<sup>235</sup> and U<sup>238</sup>  
(Massy izotopov Th<sup>232</sup>, U<sup>234</sup>, U<sup>235</sup> i U<sup>238</sup>)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 301-303  
(USSR)

ABSTRACT: Measurement of the masses of Th<sup>232</sup>, U<sup>234</sup>, U<sup>235</sup> and U<sup>238</sup> made it possible to determine the binding energy of nucleons in the nuclei not only of these isotopes but also of many radioactive isotopes connected with them by the naturally-radioactive series 4n, 4n + 2 and 4n + 3. The exact masses of these isotopes have hitherto not been determined by direct measurements. The authors determined the masses of these isotopes by means of an already previously (Ref 3) described mass-spectrographical device having a resolving power of the order of 60000 - 70000. The masses of the isotopes were determined by direct comparison with the corresponding mass of organic compounds. These organic compounds contained H<sup>1</sup>, C<sup>12</sup> and N<sup>14</sup>, the masses of which are known.

Card 1/3

The Masses of the Isotopes  
Th<sup>232</sup>, U<sup>234</sup>, U<sup>235</sup> and U<sup>238</sup>

SO7/20-124-2-16/71

The substances used for measurements are given; control was carried out by determining the mass of U<sup>238</sup> from the doublets C<sup>12</sup><sub>19</sub>H<sub>10</sub>-U<sup>238</sup> and C<sup>12</sup><sub>13</sub>C<sup>13</sup><sub>11</sub>O<sub>2</sub>-U<sup>238</sup>. Short reference is made to a second control method. Each doublet was determined by the evaluation of 18-20 mass spectrograms (which had been photographed on different plates). Results of measurements are given by a table. The masses of the isotope U<sup>238</sup>, which were determined from 2 different doublets, agree well with one another within the limits of measuring errors. The "mean value" calculated by taking account of weight amounts to  $M_{U^{238}} = 238.127284 \pm 35.10 \cdot 10^{-6}$  mass units. The mass values determined by the present paper are lower than the corresponding values determined by nuclear reactions. Also these differences remain within the limits of permissible deviations, an exception being formed only by uranium.

Card 2/3

The Masses of the Isotopes  
Th<sup>232</sup>, U<sup>234</sup>, U<sup>235</sup> and U<sup>238</sup>

SOV/20-124-2-16/71

The authors thank Ye. Ye. Baroni and K. A. Kovyrzina for placing heavy hydrogen at their disposal, and they also thank M. I. Dzkuya, G. A. Dorokhova and P. S. Brostyuk for their active help. There are 3 tables and 11 references, 6 of which are Soviet.

PRESENTED: September 26, 1958, by L. A. Artsimovich, Academician

SUBMITTED: August 29, 1958

Card 3/3

87371

S/120/60/000/004/010/028  
E032/E414

21.5300(2P16, 1033, 1138)

AUTHORS: Shyuttse, V., Demirkhanov, R.A., Gutkin, T.I.,  
Samadashvili, O.A. and Karpenko, I.K.

TITLE: A Double Focusing Mass-Spectrograph for the Measurement  
of the Masses of Isotopes

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.4, pp.92-98

TEXT: A description is given of a double-focusing mass spectrograph in which the double focusing condition is obeyed for all mass numbers. The principal ion optical parameters are as follows: ion deflection angle in the electric field  $31^{\circ}50'$ ; ion deflection angle in the magnetic field  $90^{\circ}$ ; radius of curvature in the electric field 51 cm. Owing to large linear dimensions, high stability of deflecting fields and accurate adjustment, a resolution of 120000 was achieved. The corresponding line widths were 1.5 to 2 u. The dispersion per 1% of mass was between 0.25 and 2.25 mm. A permanent magnet is employed so that the same degree of stability is achieved over the whole mass range. The spectrometer is essentially of the Mattauch type, as indicated by Fig.1, where 1 is the ion source, 2 is a cylindrical condenser, 3 is the magnet, 4 is a vacuum

Card 1/5

67371  
S/120/60/000/004/010/Q28  
E032/E414

A Double Focusing Mass-Spectrograph for the Measurement of the Masses of Isotopes

valve, 5 is the input slit, 6 is a vacuum-tight screen which also serves as the ion current receiver. 7 are slits, 8 is a Faraday cylinder, 9 is a magnetic slit, 10 is an ion-optical (image) converter with a quartz light guide, 11 is the photographic plate holder, 12 are diffusion pumps and 13 is the concrete foundation. The length of the photographic plate is 400 mm. The input slit is at a distance of 360 mm from the boundary of the electric field and the distance between the electric and the magnetic fields is 560 mm. The ion source is in the form of a water-cooled gas discharge tube. With an anode voltage of 50 kV and anode-cathode potential difference of 25 kV, the discharge current was 4 to 5 mA. The accelerating electrode is earthed and the general arrangement of the electrodes is indicated in Fig.3. The anode is in the form of a copper cylinder with a closed end and a circular aperture drilled through it. The cathode is in the form of a steel disc, having a channel of 0.5 mm in diameter and 8 mm long. The flux of slow ions

Card 2/5

87371

S/120/60/000/004/010/020  
E032/E414

A Double Focusing Mass-Spectrograph for the Measurement of the Masses of Isotopes

leaving this channel is accelerated by a third electrode in the form of a truncated cone and having a 1 mm diameter aperture. The position of the anode can be varied relative to the cathode. The magnet is such that fields up to 11000 Oe can be produced in a 4 mm gap; it is a permanent magnet with Armco-iron poles. The use of a permanent magnet ensures a high degree of uniformity ( $\Delta H/H \sim 10^{-7}$ ). In order to reduce the effect of the fringe field, a special magnetic slit made of high permeability material is used (9). Acknowledgments are expressed to E.Gotman who took part in the development of the design and to V.F.Moskovskiy and P.S.Brostyuk for practical assistance. There are 7 figures and 17 references: 1 Soviet and 16 non-Soviet.

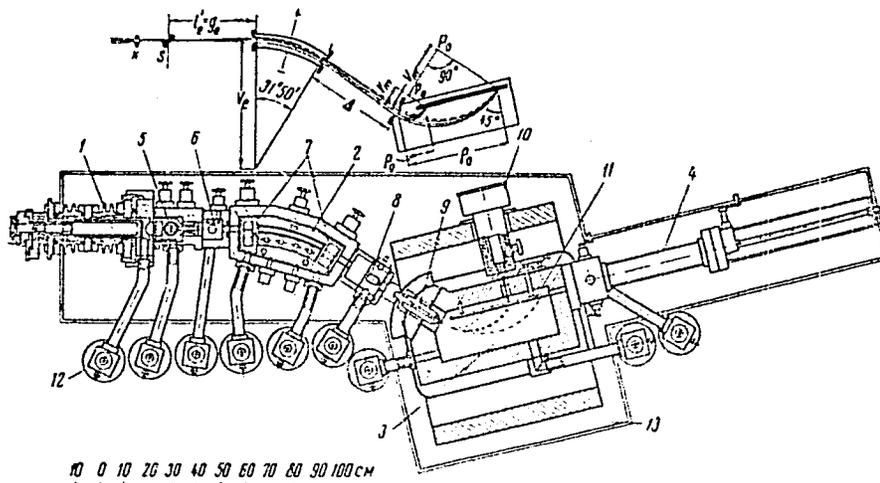
SUBMITTED: May 16, 1959

Card 3/5

67171

S/120/60/000/004/010/028  
E032/E414

A Double Focusing Mass-Spectrograph for the Measurement of the  
Masses of Isotopes



Card 4/5

Fig.1.

S/120/60/000/004/010/020  
E032/E414

A Double Focusing Mass-Spectrograph for the Measurement of the  
Masses of Isotopes

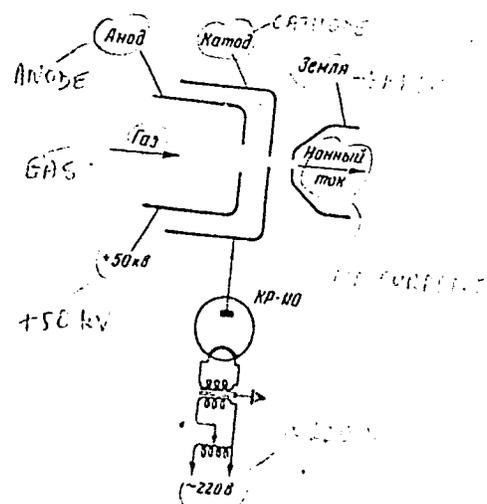


Рис. 3. Схема включения источника

Card 5/5

89257

S/048/61/025/001/023/031  
B029/B063

24.65/0

AUTHORS: Demirkhanov, R. A., Gutkin, T. I., Dorokhov, V. V.

TITLE: Masses of heavy atoms and binding energies of nuclei in the range of  $174 \leq M \leq 239$

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 1, 1961, 124-129

TEXT: The results of mass-spectrographic measurements of nuclear masses in the range of  $174 \leq M \leq 239$ , carried out for a large number of isotopes with an accuracy of  $10^{-7}$  to  $5 \cdot 10^{-7}$ , are presented. The mass spectrograph with double focusing used for the purpose had a resolution of 50,000-80,000. The masses of heavy nuclei were measured by the doublet method and with the use of the organic compounds  $C_n H_m$ ,  $C_n C^{13} H_m$ ,  $C_n N_m H_k$ , and  $C_n O_m N_k H_p$  as standard masses. The question as to whether there is a fine structure in the curve of binding energy in the mass range with  $A \sim 200$  can only be answered if the accuracy of measurement is improved by one

Card 1/10

89257

Masses of heavy atoms and binding ...

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B029/B063

order of magnitude, i.e., to  $\Delta M/M \sim 3 \cdot 10^{-7}$ , and a discontinuity of  $\sim 3$  Mev in the binding energy can be established with an accuracy of  $\sim 20\%$  if  $\Delta M/M \sim 3 \cdot 10^{-6}$ . The high degree of accuracy with which the dispersion coefficient can now be measured, and the method developed by the authors make it possible to increase the accuracy of measurement in the respective mass range by a factor of 10-50. In many cases, the mass of the isotope was determined from various doublets, i.e., the "inner agreement" was taken into account. Table 1 contains the masses of the Re, W, Ta, and Hf isotopes and, for comparison, the masses obtained by the mass-spectroscopic method and nuclear reactions. The masses of Re<sup>185</sup>, Hf<sup>179</sup>, Hf<sup>177</sup>, and Hf<sup>174</sup> were measured for the first time. The mass values of the majority of isotopes measured by the authors are higher than those obtained in Refs. 8 and 9. This is obviously due to the fact that a defective standard mass had been used. A comparison of the present data with similar values obtained by other methods is of particular interest. The results of the present paper are compared in Table 2 with those of other papers. They agree with those published by W. H. Johnson and V. B. Bahhot

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(Ref. 17) within the limits of error, but differ from the results obtained from nuclear reactions by about the double error. According to what has been said above, the Q values for the reactions

$\text{Hf}^{177}(\gamma, n)\text{Hf}^{176}$  and  $\text{Hf}^{179}(\gamma, n)\text{Hf}^{178}$  are probably erroneous, or the limits of error in the determination of the Q values of these reactions must be increased two or three times. The nuclear masses of 42 stable isotopes measured by the authors were then used to determine E/A as a function of A (per nucleon) within the range  $174 \leq M \leq 210$  (cf. Fig.). In addition, the binding energies of 66 radioactive nuclei were calculated. Table 3 contains the binding energies  $B_n$  of the last neutron and  $B_p$  of the last proton, and also the pairing energies  $P_n$  and  $P_p$  of the neutrons and protons, respectively, for the Hf, Ta, W, and Re isotopes. On the strength of these measurements it is possible to establish some rules concerning nuclear energies. The nucleus has a shell structure, and the shell is completely filled at  $Z = 82$  and  $N = 126$ . In the case of nuclei with odd A, the binding energy is always lower than in the case of nuclei with even A. At equal values of Z, the shell structure may be derived also

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from the mutual behavior of the  $(Z+1)$ th proton and the  $(N+1)$ th neutron ( $Z = 82, N = 126$ ). The binding energy of the last neutron or proton satisfies the law of conservation of parity. The authors thank Ye. Ye. Baroni and his co-workers K. A. Kovyrina and V. M. Soyfer for several preparations, as well as M. I. Dzkuya and G. A. Dorokhova for assistance. This is the reproduction of a lecture read at the Tenth All-Union Conference on Nuclear Spectroscopy, Moscow, January 19-27, 1960. There are 1 figure, 3 tables, and 21 references: 8 Soviet-bloc and 13 non-Soviet-bloc.

Card 4/10

DEMIRKHANOV, R.A.; GUTKIN, T.I.; SAMADASHVILI, O.A.; KARPENKO, I.K.

Mass measurements of tin and antimony isotopes. Izv. AN SSSR.  
Ser. fiz. 25 no.7:871-873 J1 '61. (MIRA 14:7)  
(Mass spectrometry) (Tin--Isotopes)  
(Antimony--Isotopes)

L 10814-63 EWT(1)/EWG(k)/BDS/EEC(b)-2/ES(w)-2--AFFTC/ASD/ESD-3/AFWL/  
SSD--Pz-4/Pab-4/Pi-4/Po-4--AT/IJP(C)

ACCESSION NR: AP3000007

8/0057/63/033/005/0544/0549

AUTHOR: Demirkhanov, R. A.; Gutkin, T. I.; Soldatenkov, T. R.

83

TITLE: Containment<sup>71</sup> of particles in a fluted system with current

71

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 544-549

TOPIC TAGS: plasma containment, fluted magnetic field, toroidal drift instability

ABSTRACT: Drift equations are used to describe the motion of a particle in a fluted magnetic field, with longitudinal current taken into account. A cylindrical rather than a toroidal coordinate system is used, permitting simplification of the analysis, as drift angle can be considered the same in both toroidal and cylindrical systems. It is shown that under certain conditions of current, magnetic field modulation, and periodicity, resonance particles which lead to increased losses can be eliminated in a closed system with a fluted magnetic field by a longitudinal current along the axis; charge separation and toroidal drift of particles to the walls are thereby prevented.

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ACCESSION NR: AP3000007

2

Both high- and low-velocity particles are affected, and the containing properties of the system are considerably increased. "In conclusion the authors express their thanks to A. G. Kirov for his repeated and useful discussions." Orig. art. has: 29 equations.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Gruzinskoy SSR Sukhumi (Physics-technical Institute AN Gruzinskoy SSR)

SUBMITTED: 21Jun62

DATE ACQ: 12Jun63

ENCL: 00

SUB CODE: PH,SD

NO REF SOV: 003

OTHER: 000

MCS/wf  
Card 2/2

ACCESSION NR: AP4013412

8/0057/64/034/002/0266/0268

AUTHOR: Demirkhanov, R.A.; Gutkin, T.I.; Soldatenkov, T.R.

TITLE: On the equilibrium of a plasma in a spatially periodic magnetic field

SOURCE: Zhurnal tekhn.fiz., v.34, no.2, 1964, 266-268

TOPIC TAGS: plasma, magnetic field, periodic magnetic field, plasma equilibrium, magnetohydrodynamics, pinch, linear pinch, resonance particles

ABSTRACT: A solution of the magnetohydrodynamic equations is obtained which describes an equilibrium state of a plasma filament in a spatially periodic magnetic field. Such a solution is considered to be of interest because it has recently been shown that the resonance particles that occur in these systems can be removed by means of a longitudinal current (R.A.Demirkhanov, T.I.Gutkin, T.R.Soldatenkov, ZhTF, 33,544,1963). The solution was obtained with the aid of an equation derived by R. Lüst and A.Schlüter (Zs.Astrophys.38,190,1955) and under the assumption that both the current and the pressure gradient are proportional to the magnetic flux. For a certain value of the longitudinal current, the periodicity of the magnetic field in the solution obtained disappears, and the solution reduces to that for a linear

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ACCESSION NR: AP4013412

pinch. When the longitudinal current vanishes, the solution reduces to one given by Lust and Schluter (loc.cit.). Orig.art.has: 14 formulas.

ASSOCIATION; none

SUBMITTED: 31Jan63

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: PH

NR REF SOV: 003

OTHER: 001

2/2

Card

ACCESSION NR: AP4020571

S/0057/64/034/003/0448/0453

AUTHOR: Berezin, Yu.A.; Gutkin, T.I.; Lozovskiy, S.N.; Soldatenkov, T.R.

TITLE: Interaction of a plasma with high frequency fields in the presence of a constant uniform magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.3, 1964, 448-453

TOPIC TAGS: plasma, plasma in alternating field, extraordinary wave, plasma in microwave field, skin effect

ABSTRACT: The interaction of an axially symmetric plasma in a uniform longitudinal magnetic field with an axially symmetric high frequency electromagnetic field is discussed theoretically. The high frequency field is assumed to consist of a longitudinal magnetic field and a transverse electric field (extraordinary wave). The case of a longitudinal high frequency electric field and an azimuthal magnetic field has been previously discussed by others (H.A.Boot, S.A.Self and R.B.R.Shersby-Harvie, J.Elec.Contr., 5, 435, 1958; E.S.Weibel, Ibid. 5, 435, 1958). The motion of the ions and electrons is separated into a rapid component having the frequency of the applied alternating field and the slow component that remains after averaging over a period

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ACC.NR: AP4020571

of the alternating field. The system is described by the two-fluid hydrodynamic equations and Maxwell's equations. Longitudinal and transverse temperatures and pressures are distinguished. In the "zeroth approximation", quasineutrality is assumed and the non-linear hydrodynamic terms, the pressure gradients, and the Lorentz forces due to the magnetic component of the variable field are neglected. To these zeroth approximation equations is adjoined the sum of the "first approximation" equations of motion averaged over a period of the high frequency field. From the resulting equations the particle velocities and two of the three components of the alternating field are eliminated. Two differential equations are thus obtained for the plasma density and the azimuthal electric field as functions of the distance from the symmetry axis. These equations were integrated numerically for several values of the parameters, and some of the results are presented graphically. There are two resonant frequencies. For sufficiently dense plasmas these frequencies are approximately the Langmuir frequency and the geometric mean of the ion and electron Larmor frequencies. When the frequency of the applied field is larger than the mean Larmor frequency, the plasma density increases and the alternating field decreases with approach to the symmetry axis. The mathematical simplification that results when the skin penetration depth is small compared with the radius of the plasma filament is discussed briefly. When the applied frequency is smaller than the mean Larmor

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ACC.NR. AP4020571

frequency, the extraordinary wave penetrates the plasma. In this case the azimuthal electric field amplitude is an oscillatory function of distance from the axis, and the plasma density increases, with superposed oscillations, as the distance from the axis is increased. The criterion for the validity of the approximations employed is that the electron velocity be small compared with the product of the frequency of the applied field and a characteristic length which may be either the skin penetration depth or the wavelength. "In conclusion the authors express their gratitude to R.A.Demirkhanov for his interest in the work and for discussions." Orig.art.has: 20 formulas and 4 figures.

ASSOCIATION: none

SUBMITTED: 31Jan63

DATE ACQ: 31Mar64

ENCL: 00

SUB CODE: PH

NR REF SOV: 003

OTHER: 002

Card 3/3

NIKOLAYEVSKIY, I., inzh.; GUTKIN, V., inzh.; SAVCHENKO, A., inzh.

Resistance of the base circuit. Radio no. 7:41-45 JI 163.  
(MIRA 16:7)

(Transistors)

GUTKIN, V., student IV kursa, (Moskva)

In vivo determination of chromatophil substance of the nerve cells.  
Ark.pat. 18 no.2:113-115 '56 (MIRA 11:10)

1. Iz nauchnogo kruzha kafedry patologicheskoy anatomii I Moskovskogo  
ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.

(NERVES, anatomy and histology,  
chromotophil substance, vital determ. (Rus))

SOV/112-59-24-49887

Translation from: Referativnyy zhurnal Elektrotehnika, 1959, Nr 24, p 98  
(USSR)

AUTHOR: Gutkin, V.G.

TITLE: Electroerosional Rough and Finishing <sup>17</sup>Machining of Metals

PERIODICAL: V sb.: Elektr. i ultrazvuk. metody obrabotki materialov. Lenin-  
grad, Lenizdat, 1958, pp 65 - 98

ABSTRACT: A series of machines for rough and finishing electrospark  
machining is described. As a power source for high productive  
and rough machining a welding convertor PS-100 is used, which is  
connected to electrodes through a valve. This power source is  
used in a universal broaching installation IP-1 and in a broaching  
machine EIP-1 for broaching narrow slots 1 x 3 x 28 mm and holes  
of 3.2 mm in diameter in flat Nichrome resistors. Electric and  
kinematic diagrams of machines are supplied. The automatic control  
of the electrode-tool feed is achieved by a system of polarized  
relays which operate at corresponding relations between work  
current and voltage on electrodes. The necessary operational

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SOV/112-59-24-49887

Electroerosional Rough and Finishing Machining of Metals

conditions of the servomotor of regulator are secured by switching over the relay contacts. The electric circuit diagram of EP-5M installation for broaching spray bores in nozzles and sprayers of diesels is given. A capacitor circuit serves as a power source. To eliminate the conicity of the sprayer bore the electrode enters the inner cavity until it contacts the inside opposite cavity wall. The travel of electrode is limited by a system of consecutively operating relays. Installations for marking parts of the UK-1 and UK-2 types are described. Alternating current of 220 volts is supplied to electrodes of UK-1 and direct current of 36 volts to electrodes of UK-2. The efficiency of installations is 4,000 - 14,000 marks per shift. A method of applying drawings and inscriptions to metal is described. The frequency of discharges is controlled by a photocell on which falls the light reflected by the copied image. The image scanning is achieved by deflection of the photocell and wire over the scan. The kinematic and electric diagrams of a letter-printing apparatus designed for marking parts with complex marks are given. A motion along a certain trajectory is imparted to the electrode-tool. The discharge circuit is connected to electrodes through an interrupter, con-

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SOV/112-59-24-49887  
Electroerosional Rough and Finishing Machining of Metals

sisting of a rotating brush and a fixed collector. Depending on the combination of segment connections a certain mark is reproduced on the part. A combination of collector segment connections is achieved by means of a relay circuit. Impressing ordinal numbers on the parts can be performed with special automatic counters.

A.I.K. ✓

Card 3/3

SHILOV, Gerasim Ivanovich VALITOV, Abdrashid Mukhamed-Zakirovich;  
GUTKIN, V.G., red.

[New devices for the control of the thickness of metallic  
and nonmetallic coatings] Novye pribory dlia kontroliia  
tolshchiny metallicheckikh i nometallicheckikh pokrytii.  
Leningrad, 1964. 30 p. (MIRA 17:11)

GUTKIN, V.I.

Effect of pancreatectomy on acetylcholine synthesis in the nervous tissue of frogs. Fiziol. zhur. 49 no.8:990-993  
Ag '63. (MIRA 17:2)

1. Kafedra normal'noy fiziologii i-go Meditsinskogo instituta imeni Pavlova, Leningrad.

GOL'DINA, B.G.; GUTKIN, V.S.; KRYUCHKOVA, G.S.; SAVCHENKO, Ye.D.

Pathological anatomical data on the use of suturing apparatus from the Research Institute for Experimental Surgical Apparatus and Instruments in the clinic. Trudy NIIKHAI no.5:55-64 '61.

(MIRA 15:8)

1. Nauchno-issledovatel'skiy institut eksperimental'noy khirurgi-cheskoy apparatury i instrumentov.

(SUTURES) (SURGERY, OPERATIVE)

GUTKIN, V.S.

Complications following experimental surgery using artificial  
blood circulation. Eksp. khir. i anest. 8 no.5:87-90 S-D '63.  
(MIRA 17:6)

1. Patomorfologicheskaya laboratoriya (zav.-kand. med. nauk  
B.G. Gol'dina) meditsinskogo otdela (zav.- prof. A.M. Geselevich)  
Nauchno-issledovatel'skogo instituta eksperimental'noy  
khirurgicheskoy apparatury i instrumentov (direktor M.G.  
Anan'yev) Ministerstva zdravookhraneniya SSSR.

GLADKOVSKIY, A.K.; GUTKIN, Ye.S.

Again on the age of igneous rocks of the central region of the Turgai  
Gates. Dokl. AN SSSR 96 no.1:147-149 My '54. (MLRA 7:5)

1. Ural'skiy gosudarstvennyy universitet im. A.M.Gor'kogo.  
Predstavleno akademikom N.S.Shatskim. (Turgai Gates--Rocks, Igneous)  
(Rocks, Igneous--Turgai Gates)

GUTKIN, Ye. S.

USSR/ Geology - Turgaisk plain

Card 1/1 Pub. 46 - 9/21

Authors : Gladkovskiy, A. K., and Gutkin, Ye. S.

Title : Volcanic rocks of the central part of the Turgaisk plain

Periodical : Izv. AN SSSR. Ser. geol. 1, 105-113, Jan-Feb 1955

Abstract : In the article the author evaluates the data from the study of volcanic rocks of the Turgaisk plain and their weathered crusts. Among the effusive rocks by their chemico-mineral composition the author distinguishes paleobasalts, paleobasaltine porphyrites and microporphyrites, dolerites and even liparitic porphyrites. On the basis of the study of Triassic-Jurassic continental deposits containing the rubble of the erupted rocks, conclusions are drawn about the Paleozoic rather than the Mesozoic era of the effusive rocks of the central part of the Turgay plain. Eight USSR references (1934-1952). Illustrations; drawings; tables.

Institution : .....

Submitted : August 24, 1953

007 10 10 1

AUTHOR: Gutkin, Ye.S., and Antropov, B.G. 132-12-9/12

TITLE: About Measures to Be Taken Against Well Deviation at Shot Drilling (K voprosu o merakh bor'by s iskrivleniyem skvazhin pri drobovom burenii)

PERIODICAL: Razvedka i okhrana neдр, 1957, # 12, p 56-57 (USSR)

ABSTRACT: To overcome well deviation at shot drilling, the Cheremukhovo Geologic Prospecting Team conducted experiments at north Ural bauxite deposits. By changing the direction of rotation, the angles of deviation were reduced and drilling efficiency increased. The article contains a table showing comparative data of drilling operations in two and one directions. There are 2 diagrams, 1 table and 3 references, all Slavic (Russian).

ASSOCIATION: North Ural Bauxite Expedition (Severoural'skaya boksitovaya ekspeditsiya)

AVAILABLE: Library of Congress

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GUTKIN, Ye.S.

Dickite in Severoural'sk bauxites. Zap. Vses. min. ob-va 87  
no.5:614-617 '58. (MIRA 12:1)  
(Severoural'sk--Bauxite)  
(Severoural'sk--Dickite)

ATAYEV, A.Ya.; GUPKIN, Ye.S.

Bauxite potential of the Devonian sediments in the Northern Urals  
[with summary in English]. Sov. geol. 3 no.10:73-80 0'60. (MIRA 13:10)

1. Severoural'skaya boksitovaya ekspeditsiya.  
(Ural Mountains--Bauxite)